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ED 003 666 24

CROSS-CULTURAL STUDY OF PERSONALITY CHARACTERISTICS OF YOUNG ADULTS.

BY- GHEI, S.N.
VERMONT UNIV. AND STATE AGRIC. COLL., BURLINGTON

REPORT NUMBER CRP-S-025 PUB DATE 65
EDRS PRICE MF-$0.09 HC-$2.08 52P.

DESCRIPTORS- *PERSONALITY STUDIES, *INDIVIDUAL CHARACTERISTICS, *CULTURAL DIFFERENCES, *SURVEYS, *COLLEGE STUDENTS, FOREIGN STUDENTS, TEST VALIDITY, ADULT STUDENTS, COMPARATIVE ANALYSIS, MULTIPHASIC PERSONALITY INVENTORY, EDWARDS PERSONAL PREFERENCE SCHEDULE, DELHI, INDIA, BURLINGTON, VERMONT

A STUDY OF PERSONALITY TRAITS INCLUDED (1) A SURVEY OF THE CROSS-CULTURAL STUDIES OF PERSONALITY STUDIES FROM PROFESSIONAL PUBLICATIONS AND (2) DETAILS OF A COMPARATIVE STUDY OF PERSONALITY CHARACTERISTICS OF SUBJECTS FROM THE UNITED STATES AND INDIA. THE SURVEY OF CROSS-CULTURAL PERSONALITY RESEARCH INCLUDED ANALYSES OF RSULTS FROM (1) THE MULTIPHASIC PERSONALITY INVENTORY, (2) A PERSONALITY QUESTIONNAIRE, AND (3) THE EDWARDS PERSONAL PREFERENCE SCHEDULE. THE 235 SUBJECTS OF AN EMPIRICAL STUDY WERE UNIVERSITY STUDENTS FROM DELHI, INDIA, AND 218 UNIVERSITY STUDENTS FROM VERMONT. THE TWO GROUPS WERE ROUGHLY COMPARABLE IN SOCIAL AND CLASS STATUS. THE VARIABLES USED CONSISTED OF A SET OF 15 HOMOGENEOUS SCALES DERIVED FROM 225 ITEMS OF THE EDWARDS PERSONAL PREFERENCE SCHEDULE. FOUR SAMPLE GROUPS WERE DIVIDED RANDOMLY INTO TWO COMPARABLE HALVES. THE CONCLUSIONS INDICATED SIGNIFICANT DIFFERENCES BETWEEN THE TWO GROUPS OF SUBJECTS. HOWEVER, FACTOR STRUCTURE OF NEEDS IN BOTH SUBJECTS WAS NOTED TO BE SIMILAR. THE OBJECTIVE PERSONALITY TESTS, AND THE MULTIVARIATE TECHNIQUES INDICATED GREAT POTENTIAL FOR THE STUDY OF CROSS-CULTURAL PERSONALITY CHARACTERISTICS. (RS)

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Cooperative Research Project No. S-025

by

S.N. Ghei
University of Vermont
1965

The research reported herein was supported by the Cooperative Research Program of the Office of Education, United States Dept. of Health, Education, and Welfare.

Department of Psychology, University of Vermont
Burlington, Vermont

ED 003666

Acknowledgments

This study was conducted under a Cooperative Research Contract with the U.S. Office of Education. Acknowledgment is due the U.S. Office of Education for this support. In addition, Norbert F. Charbonneau, Arnold Turner and James C. Cobb of the University of Vermont Computing Center provided invaluable help in the analysis of the data.

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1. The Objectives of the Study

The two major objectives of the research reported here were, first to survey the different methodological approaches made in the field of cross-cultural studies of personality, and, secondly, to conduct a comparative study of personality characteristics of subjects from the U.S.A. and India, with a view to determining the adequacy of objective personality tests in cross-cultural studies.

Part I of this report includes a survey of cross-cultural studies of personality published in the professional journals of psychology during the period from 1953 to 1964. The period chosen covers work reported following the publication of a report of cross-cultural studies (2) prepared for the International Union of Scientific Psychology and published with the support of UNESCO. Excluded from this survey are cross-cultural studies of personality based solely on observation, interviews, and projective techniques. Also excluded are a number of foreign publications which were either not accessible, or were available in foreign languages such as French, Italian, German, and Japanese. It has been necessary to be somewhat selective in the bibliographical coverage in view of marked differences in the quality and significance of the reported research. It is, however, unlikely that any significant cross-cultural publication of the study of personality characteristics of young adults from the U.S.A. and some other country have been omitted.

The details of the empirical investigation of subjects from the U.S.A. and India are given in Part II.

Part I
Survey of Cross-Cultural Personality Research

1. Analyses of the Minnesota Multiphasic Personality Inventory

Sundberg (1956) administered a 399 item German translation of the MMPI to 120 liberal arts senior and graduate students at the University of Marburg in 1948. Records with deviant scores on the validity scales were included in the analysis "since the meaning of these scores in the German sample was not clear." The German sample, consisting of 51 women and 60 men, was compared with an American sample of freshmen, 760 women and 1422 men. Significant differences were found between the German and the American sample on each of the MMPI scales, except L and Hy for women and K for the men. The only scale on which the German students were significantly lower was K for women. All of the significant differences were in the abnormal direction. However, the authors emphasize that there was "no reason to believe that the German students suffer from more psychopathology than American students." Under the circumstances, some of the reported differences might be attributable to test-taking attitude, differences in total score distributions, and the like.

Taft (1957) in a cross-cultural study of the MMPI, reported the results of comparison between Australian subjects and American subjects. The MMPI was administered to 65 male and 67 female volunteers at the University of Western Australia. The results were compared with the U.S. data based on a combination of 10 to 15 reported studies. The only significant difference between the U.S. and Australian means were on Mf, that is, both the Australian males and females were found to be more feminine than the American males and females. In general, the Australians were more variable than Americans on many of the scales. The comparison between the American and Australian samples at the "abnormal" level of the MMPI scales, revealed that Australian males scored higher on Pd, and Australian females on D and Sc scales. The authors concluded that where dif-

ferences were found it was impossible to decide whether they were determined by true personality differences between the Australian and American samples or by other factors such as the psychological significance of the items from one culture to the other.

Rosen (1961) reported an investigation based on the Italian translation of the MMPI administered to 474 Italian army enlisted men and 50 Italian university women. The total sample was divided into sub-samples representing particular educational-geographical combinations. Each Italian sample was compared with an American sample of roughly similar educational level. The college level Italian groups tended to score lower on K and Ma scores and higher on Hs and D scores. The non-college Italian group, regardless of geographical origin, showed strong tendencies to greater psychopathology than Americans on all scales. In general the scores of the Italian subjects indicated a strong tendency toward psychopathology coupled with a lesser degree of inhibition in admission of personality difficulties than is true of Americans. The author discounted the effect of translation and contended that "real personality differences in the direction manifested by the results could be expected to exist."

Comrey, Meschieri, Misiti, and Nencini (1965), using an Italian version of the MMPI, found substantial areas of agreement between the personality factor structure of American and Italian subjects.

2. Analyses of the Sixteen Personality Factor Questionnaire

A number of cross cultural studies have been published using Cattell's Sixteen Personality Factor Questionnaire. Anderson (1960) administered Form A of the 16 PF Questionnaire to 290 male and 138 female freshmen at the University of Western Australia in 1958. These scores were compared with corresponding American normative data. Significant differences were found between the two groups on several of the personality factors. In general, the American college

male showed a warmer, more outgoing and group dependent type of personality than the Australian college male. American females appeared to be more sociable, outgoing, and group dependent, had fewer anxieties, and were more practical and less effeminate than West Australian females.

Cattell (1961) reported a comparative study between 604 American and 204 British university subjects based on the first-order and second-order personality dimensions of the 16 PF Questionnaire. The results showed that the British students were less anxious, more introverted, more sensitive, and more radical; the American students were more anxious, more extraverted, less sensitive, and more conservative. The British students showed significantly higher ego strength and self-sentiment development, whereas the American group showed higher super-ego development, both in terms of guilt proneness and strength of the learned socio-moral pattern. The author attributed higher American anxiety to greater ergic tension, i.e., excess of stimulation over satisfaction, and greater guilt proneness.

Cattell, Pichot, and Rennes (1961) compared American and French students on the 16 PF Questionnaire. The personality factor structure of the American and French students was found to be quite similar.

Bhagoliwal (1960) reported an investigation about the adaptation of the 16 PF Questionnaire for use with Indian university post-graduate students. The details were not available.

3. Analyses of the Edwards Personal Preference Schedule

Grossack (1957) administered the EPPS to 108 Negro female students and 63 males. The Negro students were described as predominantly middle-class in outlook. The normative male group had significantly higher means than the Negro males on exhibition, autonomy, affiliation, dominance, and sex. The Negro males had significantly higher means than the normative male group on

deference, order, abasement, and endurance. The normative female group had significantly higher means than the Negro females on heterosexuality, change, dominance, succorance, affiliation, autonomy, and exhibition. The Negro females had significantly higher means than the normative female group on achievement, deference, order, abasement, endurance, and aggression.

Arkoff (1959) administered the EPPS to 320 undergraduate students at the University of Hawaii. The purpose of the study was to measure personality needs in second and third generation Japanese-Americans in Hawaii, contrasting the two generations with each other and with an American normative group. Statistically significant differences in needs were found between the Japanese-Americans, as a whole, and the American normative group. The Japanese American group had higher scores on needs deference, abasement, nurturance, order, and change, and significantly lower scores on dominance, achievement, exhibition, and heterosexuality, than the American normative group.

Fenz and Arkoff (1962) compared the need patterns of five major ethnic groups in Hawaii. Subjects were selected by means of an ethnic questionnaire from the five largest high schools on the island of Oahu. The total sample included 146 Caucasians, 155 Chinese, and 560 Japanese subjects, as well as 67 Filipinos and 87 Hawaiians. The results indicated highly significant differences between Caucasians and other groups. Differences appeared among the other groups but, in general, they resembled each other more than they did the Caucasians. The authors feel that in view of consistent and striking differences between Caucasians and non-Caucasians, "a case might be made for two general patterns of needs, one Caucasian and the other non-Caucasian." The profiles of the several female groups were more similar than those for the male groups.

Fuster (1962) administered the EPPS to 288 male and female Indian college students. The mean age of men was 17.70 years and that of women 18.77 years. Only those subjects who scored above 9 in consistency score were included in the

investigation. Indian women had significantly higher means than American women on achievement, order, abasement, nurturance, and aggression. American women had significantly higher means than Indian women on exhibition, affiliation, dominance, and heterosexuality. Indian males had significantly higher means than American males on deference, order, abasement, nurturance, endurance, and aggression. American males had significantly higher means than Indian males on autonomy, affiliation, intraception, and heterosexuality.

4. Analyses of Scales

Cohn (1954) administered a German translation of the F scale to 140 workers in a cosmetic factory in 1952. The German mean score was much higher than the mean score for any other group reported at that time. The data are interpreted to support the validity of the F-scale, the underlying assumption being that German workers had Fascist personalities.

McClelland, et al. (1958) reported a factor analytic study based on 74 United States and 87 German male students. The subjects were carefully matched for age, socio-economic level, and educational background. The investigators were interested in delineating the nature of personally-felt obligations to oneself and to society in general. A 38 item questionnaire of the F-scale type, covering various value sentiments, and a picture-story test for measuring need achievement and need affiliation were administered to the subjects in the two countries. The factor-analysis of the questionnaire responses showed that "the major obligation to self was achievement-oriented in the United States, whereas, in Germany, it was to become a separate unique entity. Societal obligations in the U.S. were directed towards group participation, while in Germany, they were organized about duty to an impersonal other." Further analysis showed that the American students scored higher than the Germans on achievement and on participation in group activities; Whereas the Americans were reported to be guided

by the opinion of others, the Germans seemed to act more independently, and participated in more of the individualistic types of activities.

Turner (1960) administered two eight-item Guttman-type scales devised to measure manifest preoccupation with competitiveness and with social acceptance to 1406 university and junior college students in the U.S. and 298 university students in England, principally at Birmingham University. The two scales showed acceptable reproducibility in both the U.S. and England. Contrary to the general opinion that the Americans were overly preoccupied with competition and with seeking to be popular, the results of this study did not show any manifest differences in these characteristics between the U.S. and English students.

Kilpatrick and Cantril (1960) employed the method of self-anchoring scaling in their study of students and members of legislative bodies in the United States, Britain, West Germany, France, Italy, Japan and India. In India the scale was administered to 100 parliamentarians and 100 college students in six different universities. In the U.S. the scale was administered to over 1000 college students in 14 different institutions. The general procedure was to ask each respondent to describe what, for him, would be the very ideal way of life, what he perceived as the very worst way of life, for himself, for his country, etc. Then the respondent was handed a pictorial non-verbal scale such as the ten-point ladder scale. He was asked a series of questions such as "where on this ladder would you say you are now? Where on this scale were you two years ago? Five years ago?" The responses were coded and analyzed.

The underlying idea was to compare the concerns of people living in nations that represent different degrees of industrial development and different political ideologies. Comparison between Indian and American subjects in personal fears and aspirations and national fears and aspirations showed some striking differences and similarities. For example, over 50% of the Indian students

mentioned the desire to lead a life of service to the people or to the nation, whereas less than 20% of the American students mentioned anything related to this concept. About 23% of the American students were concerned about acceptance by others, whereas less than 18% of the Indian students expressed this need. In spite of wide differences in standards of living and the opportunities ahead, Indian students did not rate themselves very much lower than did American students with respect to either the past, present, or future.

5. Analyses of Ratings

Morris and Jones (1955) investigated human values across cultures by means of psychometric scaling analysis and factor analysis. The material to be analyzed consisted of ratings of 13 possible ways to live by male college students, from five different countries: The U.S.A. (N=252), India (N=724), Japan (N=192), China (N=523) and Norway (N=149). In this approach, the subjects indicate their preferences among the ways to live, which represent the various conceptions of a desirable life as embodied in the main religious and ethical traditions of the world. The "ways to live" were administered in English to students from the U.S.A. and India, whereas in Japan, China and Norway, the subjects were given translations of the original document. All of the data were collected between 1945 and 1952. Some of the important findings of the study, based on factor analysis of the ratings, are given below:

U.S.A.: The Ss from the United States scored higher than any other group except China on the factor "enjoyment in action." They obtained positive scores on the factor "social restraint and self-control," but this was lower than found for other groups.

India: The factor "social restraint and self-control" was much higher in India than elsewhere. The authors found considerable tension among Indian Ss between preservation of the cultural heritage and reconstruction of the existing society.

Japan: Japan was lower than any of the other groups in the acceptance of the factor "enjoyment in action" and showed the greatest acceptance of the factor "withdrawal and self-sufficiency."

China: The factor pattern of China was more similar to that of the U.S.A. than those of Japan and India. The Chinese subjects scored highest on the factor "enjoyment in action."

Norway: The Norwegian Ss appeared to follow a "middle way." The Norwegian Ss were not as high on the factor "enjoyment in action" as were China and the U.S.A., nor as low as India and Japan. Also, the factor "withdrawal and self-sufficiency" was not found to be as high as in Japan and India, nor as low as in China or the U.S.A.

The overall conclusion of the author is that it is possible to compare quantitatively the value patterns of different cultures in terms of common value dimensions.

Prothro (1958) administered the "ways to live" document used by Morris to 100 Near Eastern Arab males at the American University of Beirut. There were 49 subjects from Lebanon, 22 from Jordan, 20 from Syria, and 9 from other Arab countries in the total group. The ratings of the "ways" were analyzed by means of factor analysis similar to that of Morris and Jones. The conclusions largely supported Morris and Jones' findings that there were common value dimensions across cultures which could be quantitatively measured. More specifically Arab males gave greatest preference to ways involving activity, group participation, and self-control. They rejected ways which centered on contemplation and solitary living. Above all, they accepted the ideal of permitting themselves to be used by cosmic forces - which, according to the author, is quite compatible with the classical interpretation of 'Islam' as meaning submission to fate.

Jones and Boch (1960) applied the technique of discriminant analysis to the

data obtained by Morris and Jones. The data included ratings by 6 groups of 117 Ss each, randomly selected from the larger samples, to which the "ways to live" schedule had been administered by Morris. The six groups included U.S. Negro, U.S. white, Indian, Chinese, Japanese, and Norwegian subjects. The authors used discriminant analysis on the ground that it was much more appropriate for specification of between-culture differences, as opposed to factor analysis which was more appropriate for within-culture analysis of value structure. The authors found that the American Negro considered personal dignity as a more desirable attribute than the American white. The American Negro also placed higher value on the importance of action for the sake of social progress. In general, U.S. college students, both Negro and white, emphasized moderation and eclecticism in personal conduct; the Japanese emphasized receptivity and self-containment; the Indians, dignity and self-control.

Osgood, Ware, and Morris (1961) reported the preferences among Morris' 13"ways to live" for a group of 55 Stanford college men. Their results proved to be in substantial agreement with the data on the U.S. subjects reported earlier by Morris and Jones (1955). In this study the 13 "ways to live" were also judged against a 26-scale form of the semantic differential. The results of the semantic differential showed that for American college students, preferences among "ways" were related to an evaluative factor of "successfulness" attributed to the alternative ways.

Morris found evidence for common factors in value preferences despite differences in the preferential ordering of the "ways" for cultures as disparate as India and the U.S.A. Osgood, Ware, and Morris, however, doubt very much if comparative analysis of connotative meanings of the ways to live would yield common factors across cultures, and recommended comparative cross-cultural study of values as an important research area bearing on international under-

standing and communication.

6. Analyses of the STUDY OF VALUES:

Nobechi and Kinyura(1957) reported investigations based on the "Study of Values" developed by Allport, Vernon, and Lindzey. In religious values, the United States subjects, especially the females, scored much higher than the Japanese subjects. The U.S. students also scored higher on social values than the Japanese students. Japanese students, on the other hand, scored much higher than U.S. students on aesthetic value.

Ray-Chowdbury (1958) reported findings on the adaptation of the Allport-Vernon "Study of Values" (old form, 1931) with English speaking subjects from India. The "Study of Values" was found to be quite reliable in the Indian setting. Data on sex, occupational and cultural differences were reported. The authors found that the value preferences of the highly cultured Hindus were much closer to the Anglo-Americans than those of the Moslems.

Rodd (1959) administered the "Study of Values" in Chinese to 765 Taiwanese and 525 mainland Chinese college-preparatory students in Taiwan. The results were compared with those obtained by Nobechi and Kinyura as well as those reported for the 1951 standardisation sample of 1816 U.S. college students. The authors found that: (a) Taiwanese students on Taiwan were more like the mainland Chinese students in value preferences than they were like the Japanese students or American students; (b) the Taiwan group preferred the theoretical value as compared to the Japanese who preferred the aesthetic value; (c) like the American female, both the Taiwanese and mainland Chinese females showed a high preference for religious value.

7. Analyses of Laboratory Experiments:

Schachter (1954, 1955) reported the results of a number of cross-cultural

experiments conducted by the Organization for Comparative Social Research. These experiments ware designed to investigate the reactions to a deviate from a group norm in the experimentally produced setting of a threatened group goal. Subjects from Holland, Sweden, France, Norway, Belgium, Germany, and England participated in this experiment. In some of the experiments, manipulations of the independent variables did not prove to be effective. The authors felt that "this failure to produce the necessary experimental conditions appeared in part, to be culturally determined." One general conclusion of the experiments was that a deviate tends to be universally rejected by others.

French and Zajonc (1957) conducted an experimental study of cross-cultural norm conflict based on forty-four male Indian students at the University of Michigan. It was assumed that, in general, Indian students, because of temporary residence in the U.S.A., were subjected to two different sets of norms. Since the Indian norms called for higher deference towards professors, this area of potential conflict was selected for experimental purposes. A number of hypotheses were formulated and tested. In general, the observed pattern of behavior was consistent with theoretical expectations.

Bagby (1957) reported a cross-cultural study of perceptual predominance under conditions of binocular rivalry. The major purpose of the investigation was to discover "whether the cultural characteristics of conflicting visual presentations are differentially perceived by members of different societies." Twelve Mexican and twelve matched American subjects were simultaneously presented with a series of ten stereogram slide pairs of similar scenes, one from Mexico and one from the United States. Under these conditions of experimentally induced binocular rivalry, it was found that scenes from the subjects' own culture tended to be perceptually predominant. The findings were accounted for in terms of the role of personal significance in perceptual process.

Pettigrew, Allport and Barnett (1958) conducted a study to test the hypothesis that reacial identification is partly determined by subjective variables and especially by the subject's own racial membership. Members of the various racial groups in South Africa were asked to evaluate the racial characteristics of pairs of racial photographs. The pairs of photographs were presented stereoscopically; the factor of eye dominance was controlled. Whereas many of the findings could be accounted for by the nature of the stimulus material itself, other factors, largely racial, were also quite important in some of the findings. White South Africans, especially the Afrikaaners, seemed to manifest a perceptual vigilance in their judgments. "They reported racially mixed photographs to be either pure 'European' or full-blooded African more often than did judges of other races.

Honkavaara (1959) compared subjects from Harvard and London universities on a modified Descoendres color-and-form test. She found that form-reactors predominated at Harvard and color-reactors at London. The author related the observed difference to the English student being more intellectual, sensitive, shy, and individualistic, the American student being more practical and socially conforming.

Wanger and Bagchi (1961) reported some interesting findings about autonomic functions in practitioners of Yoga in India. Some of the Yogis demonstrated control of autonomic functions, e.g., slowing of the heart beat, perspiring on command, etc. The authors feel there are probably some racial differences in autonomic nervous system functions.

8. <u>Analyses of Miscellaneous Instruments</u>:

Ray-Chowdbury (1958) administered a modified form of Allport and Vernon's "Ascendance-Submission Reaction Study" to both male and female subjects in India. While the test proved to be highly reliable, no significant differences were

found between the Indian and the American subjects.

Arkoff, Meredith, and Iwahara (1962) investigated dominance-deference patterns among 63 Caucasian Americans, 76 third-generation Japanese-American undergraduate students from the University of Hawaii, and 113 Japanese students from Nara Gakugei University in Nara, Japan. A 20 item dominance-deference questionnaire, based on Murray's need theory, was used in this investigation. The Caucasian-American male and female groups achieved significantly higher dominance scores than the same sex Japanese-Americans; however, there was no significant difference between the Caucasian-American and the Motherland-Japanese groups.

Retting and Pasamanick (1962) reported an investigation of a comparison of two factor analyses of ratings of moral judgments of 489 American and 513 Korean college students. The subjects rated the degree of "wrongfulness" of 50 morally prohibited behaviors such as killing a person in defense of one's own life, having sex relations while unmarried, forging a check, etc. The authors found that the structure of moral judgments on a specified set of moral issues was considerably invariant acorss the U.S. and Korean cultures.

Klinger (1962) investigated the moral values of foreign students and American students at the University of Michigan by means of a questionnaire containing 130 items. The total sample included 50 Arab Moslems, 53 Chinese non-Christians, 86 Indian Hindus, 53 South American Roman Catholics, 63 Turkish Moslems, 50 U.S. Protestant graduate students and 70 U.S. Protestant high school graduates. The authors found that the Turks and the South Americans had a very lenient outlook as far as pre-marital sex relations were concerned. The Arab Moslems were in favor of interracial marriage whereas the U.S. students were not in favor of such marriages.

Farber (1957) compared English and American New Year's resolutions obtained

through the British Institute of Public Opinion and the American Institute of Public Opinion. One of the commonly reported resolutions by American respondents related to a need to improve or build one's character, whereas the English respondents reported no such resolve at all. The author contended that Americans viewed their character as a sort of modifiable environment. The English on the other hand hate to admit imperfections of character as this would be very highly anxiety arousing.

Alfert (1959) administered a shortened version of a multiple score personality test developed at Vassar College. This test provided scores on such variables as social maturity, confidence, dominance, impulse expression, etc. The European samples consisted of 59 female German university students, 62 female German student teachers, and 69 female Austrian students from the University of Vienna. Comparisons of scores of Vassar College students with those of small samples of German and Austrian students indicated that intercultural differences were less significant than personality differences within each culture.

Remmers (1962) compared the responses to the SRA Youth Inventory of teenagers from the United States, Puerto Rico, West Germany, and India. He found that American teenagers were significantly more worried about getting people to like them than teenagers of the other cultures.

Brengelmann (1959) administered a number of questionnaires and psychological tests such as Maudsley Personality Inventory, California Psychological Inventory of Rigidity, etc. to 165 English and 200 German subjects. No significant differences were found between the two groups in extraversion and neuroticism. Highly significant differences were found however in such variables as dogmatism, rigidity, intolerance of ambiguity, and response set. On the whole, Germans tended to be more intense and extreme in their responses than the English.

CONCLUSIONS AND IMPLICATIONS

It is clear from the foregoing survey that a variety of variables, procedures, and populations have been utilized in the cross-cultural study of personality. Judging by the number of studies published since 1953, there has been a great deal of interest in this area. However, only a few of these studies, such as, for example, those by Morris and Jones (1955), Osgood, Ware, and Morris, (1961), Schachter (1954), and French and Zajonc (1957) are based on adequate theory and methodology.

Many of the studies based on psychological tests, questionnaires, and similar instruments have shown that young adults in the United States are different from subjects of other cultures on a number of variables. Thus, for example, cross-cultural investigations based on the MMPI have consistently shown that subjects from other countries have higher mean scores than Americans on the MMPI clinical scales. Rosen and Rizzo (1961) concluded from their comparative study of American and Italian subjects that the Italians did in fact have a greater tendency to psychopathology than Americans. Such a conclusion, however, is quite erroneous, as they did not investigate the validity of the validity scales of the MMPI, nor in fact has this problem been investigated in any published cross-cultural study of the MMPI. Most investigators using psychological tests, questionnaires, and scales tell us that cross-cultural differences in personality characteristics exist but do not tell us a great deal more than that.

Whereas most investigators using psychological tests, questionnaires, etc. have been, by and large, concerned with delineating cross-cultural differences in personality characteristics, there are some investigators, such as Schachter (1954), French and Zajonc (1957), who have attempted to test carefully formulated hypotheses. This is indicative of a very healthy development in the area.

Hopefully more studies of this kind will be published in the future.

The most profitable directions for cross-cultural personality research seem to be clearly indicated. Instruments and procedures capable of yielding cross-culturally comparable results should be developed. The problem of response bias in the cross-cultural use of personality inventories should be investigated. Studies should be designed to include subjects from more than two or three cultures, and they should be replicated by several investigators. Investigations employing a varied number of techniques, procedures, and theories should be undertaken.

Finally, and perhaps most importantly, there is a need for an overall theoretical and methodological framework which would provide the basis for the accumulation of the right kind of data. Without such a theoretical framework, the cross-cultural study of personality will not progress beyond the accumulation of preliminary data, and the development of a trans-cultural taxonomy of personality characteristics will remain a distant goal.

PART II

Empirical Investigation

One of the major objectives of the project was to determine the adequacy of objective personality tests in cross-cultural comparative studies. An exploratory study of the personality characteristics of subjects from India and the U.S.A. was conducted for this purpose. The details are as follows:

Subjects and Procedure

Subjects:

A total of 235 University of Delhi undergraduates and 218 University of Vermont undergraduates participated in this study. The Indian subjects were enrolled in a liberal arts curriculum at the sophomore, junior, and senior levels. All of them were interested in psychology; some of them had taken at least one course in the area. All of them understood English, having studied it regularly for a period of between six and twelve years. The American subjects were obtained from the department subject pool consisting of students enrolled in a course in introductory psychology. The two groups were roughly comparable in social status as indicated by their fathers' occupations. The majority of them came from middle class backgrounds. Detailed information about the size and age of the two groups is given below:

Table 1

Characteristics of the two groups

	American		Indian	
	Male	Female	Male	Female
N	110	102	106	110
Mean Age	20.08	18.99	19.24	18.47
Age Range	18-25	18-21	16-24	17-21

Variables:

The variables used in this study consist of a set of 15 homogeneous scales derived from 225 items of the Edwards Personal Preference Schedule (1954). These scales provide measures of 15 manifest needs such as, for example, need Achievement, Affiliation, and Aggression. The maximum score for each variable is 28. One distinctive feature of the Edwards Personal Preference Schedule (EPPS) is that each item consists of a pair of statements approximately equal in social desirability scale values.

In addition to the 15 manifest needs, the EPPS provides a measure of test consistency based upon a comparison of the number of identical choices made in two sets of the same 15 items. Edwards has stated that if a subject obtaine a consistency score of less than 9, then his scores on the 15 manifest need variables may be questioned. For this reason, only those subjects who obtained a consistency score of 9 or more were included in this study. This excluded 19 Indian subjects and 6 American subjects.

Analysis:

Each of the four basic samples, namely, American male and American female, and Indian male and Indian female, was divided randomly into two comparable halves. This enabled us to make two independent comparisons between American males and Indian males and American females and Indian females. Sex differences across the two cultures were also compared. Mean differences in manifest needs were tested by the t statistic. Overall comparisons between American and Indian data were made, using Fisher's linear discrominant function (1949). The product-moment correlations were compared between variables for American females and Indian females. The correlation matrices were factor-analyzed by the centroid method (1947).

Results and Discussion

Reliability:

Internal-consistency coefficients for the 15 EPPS variables are given in Table 2. These are cited from an earlier study by the investigator.[1] All of the coefficients were significant at less than the .01 level. In general, the reliability coefficients were lower than those reported by Edwards (1954).

Table 2

Coefficients of Internal Consistency for the EPPS Variables

Variable	Edwards' college normative group (N = 1509)	Liberal Arts group (N = 97)
1.Achievement	.74	.58
2.Deference	.60	.60
3.Order	.74	.74
4.Exhibition	.61	.69
5.Autonomy	.76	.56
6.Affiliation	.70	.47
7.Intraception	.79	.80
8.Succorance	.76	.79
9.Dominance	.81	.62
10.Abasement	.84	.71
11.Nurturance	.78	.55
12.Change	.79	.76
13.Endurance	.81	.71
14.Heterosexuality	.87	.85
15.Aggression	.84	.72

1. S.N. Ghei. The reliability and validity of Edwards Personal Preference Schedule: A cross-cultural study.' J. soc. Psychol., 1963, 61, 241-246.

Cultural Differences:

The means and standard deviations, in raw score units, for each of the need variables for the female samples are given in Tables 3 through 5. As Table 3 shows, American females have significantly higher means than Indian females on Exhibition, Affiliation, Intraception, and Heterosexuality. Indian females, on the other hand, have significantly higher means than American females on Achievement, Deference, Order, Dominance, Endurance, and Aggression. Except for need Affiliation (American females) and need Dominance and Aggression (Indian females), all of the mean differences in need variables between American females and Indian females held out very well, as shown in Table 4. Thus, mean differences on need variables between American females and Indian females were found to be stable from sample to sample.

Table 5 gives the means and standard deviations for each of the need variables for the total female samples of 102 American females and 110 Indian females. The American females have significantly higher means ($p < .01$) than the Indian females on Exhibition, Intraception, and Heterosexuality. Indian females, on the other hand, have significantly higher means ($p < .01$) than American females on Achievement, Deference, Order, and Endurance.

The means and standard deviations for each of the EPPS variables for the male samples are given in Tables 6 through 8. Table 6 shows that American males have significantly higher means than Indian males on Exhibition and Heterosexuality. Indian males, on the other hand, have significantly higher means than American males on Deference, Order, Nurturance, and Endurance.

As shown in Table 7, American males have higher means than Indian males on Autonomy, Change, and Heterosexuality; on the other hand, Indian males have higher means than American males on Order and Nurturance.

Mean differences on need variables between American males and Indian

males do not appear to be quite as consistent as those between American females and Indian females.

Table 8 gives the means and standard deviations for the 15 EPPS need variables for the total male sample of 110 American and 106 Indian males. The American males have significantly higher means than the Indian males on Exhibition, Autonomy, and Heterosexuality; the Indian males, on the other hand, have significantly higher means than American males on Deference, Order, Nurturance, and Endurance. These results are similar to those reported by Fuster (1962).

Sex Differences:

As shown in Table 9, Indian females have significantly higher means than Indian males on Affiliation, Succorance, and Change. Indian males have significantly higher means than Indian females on Order, Autonomy, Dominance, Nurturance, and Heterosexuality.

American females have higher means than American males (see Table 10) on Affiliation, Intraception, Succorance, Abasement, and Nurturance; American males have significantly higher means than American females on Achievement, Autonomy, Dominance, Endurance, and Aggression.

In both the United States and India, females have significantly higher means than males on Affiliation and Succorance, and males have significantly higher means than females on Autonomy and Dominance.

TABLE 3

Comparison of Female Samples

A & B

Variable	India Sample A (N=55) Mean	S.D.	U.S.A. Sample B (N=51) Mean	S.D.	t
1. Achievement	14.47	3.35	11.61	3.78	4.09****
2. Deference	13.42	3.67	10.73	3.36	3.89****
3. Order	13.80	4.01	10.10	4.05	4.68****
4. Exhibition	11.58	3.32	13.86	3.58	3.37***
5. Autonomy	12.44	4.53	13.00	4.47	.64
6. Affiliation	13.84	3.29	16.22	3.53	3.56****
7. Intraception	16.00	3.94	17.98	4.57	2.37**
8. Succorance	12.58	4.66	13.51	4.45	1.04
9. Dominance	13.62	4.12	11.53	4.11	2.58**
10. Abasement	16.04	4.96	17.39	4.62	1.44
11. Nurturance	17.87	3.41	17.82	3.52	.07
12. Change	17.13	4.06	17.33	4.69	.24
13. Endurance	16.55	4.67	11.77	5.11	4.99****
14. Heterosexuality	6.82	6.50	15.63	5.16	7.62****
15. Aggression	13.84	3.77	11.53	4.24	2.93***

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 4

Comparison of Female Samples

C & D

Variable	India Sample C (N=55) Mean	S.D.	U.S.A. Sample D (N=51) Mean	S.D.	t
1. Achievement	14.13	2.95	12.06	3.28	3.39***
2. Deference	13.24	3.51	10.10	3.19	4.76****
3. Order	14.04	4.43	9.49	3.75	5.63****
4. Exhibition	11.64	3.51	13.37	3.45	2.54**
5. Autonomy	11.71	4.01	12.67	4.50	1.15
6. Affiliation	14.42	4.13	14.61	4.79	.22
7. Intraception	16.35	4.03	18.49	4.05	2.70***
8. Succorance	12.13	5.01	13.45	4.81	1.37
9. Dominance	13.87	3.77	13.47	5.39	.44
10. Abasement	17.11	4.22	16.61	4.25	.60
11. Nurturance	18.13	3.60	17.28	4.26	1.11
12. Change	16.73	4.31	16.80	6.21	.07
13. Endurance	15.15	4.72	12.39	5.08	2.86***
14. Heterosexuality	7.95	5.55	16.51	5.60	7.83****
15. Aggression	13.27	4.37	12.71	4.88	.63

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 5

Comparison of Total Female Samples

Variable	India Samples A & C (N=110) Mean	S.D.	U.S.A. Samples B & D (N=102) Mean	S.D.	t
1. Achievement	14.30	3.16	11.83	3.55	5.33****
2. Deference	13.33	3.59	10.41	3.29	6.12****
3. Order	13.92	4.23	9.79	3.91	7.32****
4. Exhibition	11.61	3.42	13.62	3.52	4.19****
5. Autonomy	12.07	4.29	12.83	4.49	1.26
6. Affiliation	14.13	3.74	15.41	4.29	2.32*
7. Intraception	16.17	3.99	18.24	4.33	3.59****
8. Succorance	12.36	4.84	13.48	4.63	1.72
9. Dominance	13.75	3.95	12.50	4.89	2.04*
10. Abasement	16.57	4.64	17.00	4.46	.68
11. Nurturance	18.00	3.51	17.55	3.92	.88
12. Change	16.93	4.20	17.07	5.51	.21
13. Endurance	15.85	4.75	12.08	5.10	5.54****
14. Heterosexuality	7.38	6.07	16.07	5.40	10.92****
15. Aggression	13.56	4.09	12.12	4.61	2.39**

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 6

Comparison of Male Samples

E & F

	India Sample E (N=53)		U.S.A. Sample F (N=55)		
Variable	Mean	S.D.	Mean	S.D.	t
1. Achievement	14.64	2.97	15.71	4.76	1.38
2. Deference	12.59	3.18	11.06	3.54	2.34*
3. Order	15.36	3.72	11.44	5.49	4.29****
4. Exhibition	11.53	4.29	13.78	3.45	2.99***
5. Autonomy	13.57	3.12	14.07	4.11	.71
6. Affiliation	12.40	4.18	12.82	3.55	.56
7. Intraception	15.85	4.01	16.58	4.96	.84
8. Succorance	9.08	4.28	10.66	4.94	1.76
9. Dominance	14.76	3.42	15.33	4.48	.74
10. Abasement	15.93	4.28	14.71	4.67	1.40
11. Nurturance	16.45	3.86	13.07	4.20	4.31****
12. Change	15.53	3.51	15.33	4.35	.26
13. Endurance	17.25	4.30	14.07	5.53	3.29***
14. Heterosexuality	11.60	6.04	16.95	6.07	4.54****
15. Aggression	13.47	4.05	14.44	4.24	1.20

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 7

Comparison of Male Samples

G & H

Variable	India Sample G (N=53) Mean	S.D.	U.S.A. Sample H (N=55) Mean	S.D.	t
1. Achievement	13.83	3.31	14.55	4.97	.87
2. Deference	12.38	3.75	11.29	3.76	1.49
3. Order	14.77	3.46	10.55	4.16	5.68****
4. Exhibition	12.23	3.91	12.86	3.87	.83
5. Autonomy	12.76	3.84	14.86	4.34	2.63***
6. Affiliation	13.28	4.64	12.51	3.84	.94
7. Intraception	14.70	3.97	16.27	4.72	1.86
8. Succorance	10.19	4.17	10.02	4.30	.21
9. Dominance	15.53	3.80	15.36	4.94	.19
10. Abasement	15.93	3.46	15.20	4.54	.92
11. Nurturance	16.00	4.37	13.33	4.97	2.94***
12. Change	14.70	3.29	16.31	4.51	2.09*
13. Endurance	16.13	4.30	15.02	5.58	1.15
14. Heterosexuality	13.81	6.36	16.95	5.29	2.76***
15. Aggression	13.77	3.75	14.95	4.37	1.48

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 8

Comparison of Total Male Samples

	India Samples E & G (N=106)		U.S.A. Samples F & H (N=110)		
Variable	Mean	S.D.	Mean	S.D.	t
1. Achievement	14.24	3.17	15.13	4.90	1.57
2. Deference	12.48	3.48	11.17	3.65	2.68***
3. Order	15.07	3.60	10.99	4.89	6.92****
4. Exhibition	11.88	4.12	13.32	3.70	2.69***
5. Autonomy	13.16	3.52	14.46	4.24	2.44**
6. Affiliation	12.84	4.44	12.66	3.70	.32
7. Intraception	15.27	4.03	16.43	4.84	1.89
8. Succorance	9.63	4.26	10.34	4.64	1.16
9. Dominance	15.14	3.63	15.35	4.71	.35
10. Abasement	15.93	3.89	14.96	4.61	1.66
11. Nurturance	16.23	4.13	13.20	4.60	5.06****
12. Change	15.11	3.43	15.82	4.46	1.29
13. Endurance	16.69	4.34	14.55	5.58	3.13***
14. Heterosexuality	12.71	6.30	16.95	5.69	5.17****
15. Aggression	13.62	3.91	14.69	4.31	1.90

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 9

Comparison of Sex Differences (India)

	Female Samples A & C (N=110)		Male Samples E & G (N=106)		
Variable	Mean	S.D.	Mean	S.D.	t
1. Achievement	14.30	3.16	14.24	3.17	.15
2. Deference	13.33	3.59	12.48	3.48	1.75
3. Order	13.92	4.23	15.07	3.60	2.13*
4. Exhibition	11.61	3.42	11.88	4.12	.52
5. Autonomy	12.07	4.29	13.16	3.52	2.02*
6. Affiliation	14.13	3.74	12.84	4.44	2.30*
7. Intraception	16.17	3.99	15.27	4.03	1.64
8. Succorance	12.36	4.84	9.63	4.26	4.36****
9. Dominance	13.75	3.95	15.14	3.63	2.69***
10. Abasement	16.57	4.64	15.92	3.89	1.11
11. Nurturance	18.00	3.51	16.23	4.13	3.39****
12. Change	16.93	4.20	15.11	3.43	3.46****
13. Endurance	15.85	4.75	16.69	4.34	1.36
14. Heterosexuality	7.38	6.07	12.71	6.30	6.30****
15. Aggression	13.56	4.09	13.62	3.91	.12

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

TABLE 10

Comparison of Sex Differences (U.S.A.)

	Female Samples B & D (N=102)		Male Samples F & H (N=110)		
Variable	Mean	S.D.	Mean	S.D.	t
1. Achievement	11.83	3.55	15.13	4.90	5.54****
2. Deference	10.41	3.29	11.17	3.65	1.58
3. Order	9.79	3.91	10.99	4.89	1.95
4. Exhibition	13.62	3.52	13.32	3.70	.60
5. Autonomy	12.83	4.49	14.46	4.24	2.71***
6. Affiliation	15.41	4.29	12.66	3.70	4.99****
7. Intraception	18.24	4.33	16.42	4.84	2.85***
8. Succorance	13.48	4.63	10.34	4.64	4.91****
9. Dominance	12.50	4.89	15.35	4.72	4.29****
10. Abasement	17.00	4.46	14.96	4.61	3.27***
11. Nurturance	17.55	3.92	13.20	4.60	7.35****
12. Change	17.07	5.51	15.82	4.46	1.81
13. Endurance	12.08	5.10	14.55	5.58	3.34****
14. Heterosexuality	16.07	5.40	16.95	5.69	1.14
15. Aggression	12.12	4.61	14.69	4.31	4.18****

**** $p < .001$ ** $p < .02$

*** $p < .01$ * $p < .05$

Multivariate Prediction:

Since one of our objectives was to find out if subjects from India and the United States could be classified into two unique categories on the basis of their EPPS performance, it was decided to use Fisher's discriminant function for this purpose. This function provides a linear combination of several numerical measurements which would discriminate best the members of one group from those of another group. The computation of linear discriminant function involves the evaluation of the relative amount of information for differentiation provided by the several variables and the interrelationships among them.

The discriminant function had the general form of:

$$\alpha = \lambda_1 x_1 + \lambda_2 x_2 + \lambda_3 x_3 \ldots\ldots\ldots\ldots\ldots\ldots \lambda_{16} x_{16}$$

where X's are the measurements of the different characteristics and the λ's are the weights which will produce the maximum discrimination between the two cultural groups. The values of the λ's were found from the simultaneous solution of the following sixteen normal equations:

$$s_{11} \lambda_1 + s_{12} \lambda_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots s_{1,16} \lambda_{16} = d_1$$

$$s_{21} \lambda_1 + s_{22} \lambda_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots s_{2,16} \lambda_{16} = d_2$$

$$\vdots \qquad \vdots \qquad \vdots \qquad \vdots \qquad \vdots \qquad \vdots$$

$$s_{16,1} \lambda_1 + s_{16,2} \lambda_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots s_{16,16} \lambda_{16} = d_{16}$$

The d-values were the differences between means of each variable, whereas the sums of squares and sums of cross-products were the within-group deviation values.

In the present investigation three separate analyses were performed: to establish discrimination between (a) American females and Indian females, (b) American males and Indian males, and (c) the total American and Indian samples. As shown in Tables 11, 12, and 13, the hypothesis of homogenous groups is rejected in all of the three comparisons.

TABLE 11

Analysis of Variance of α Between and Within Female Groups

Source of Variance	DF	SS	MS	F	Hypothesis
Within Groups	89	.043650853	.00049045903		
Between Groups	16	.050421120	.0031513200	6.4252461	Rejected
Total	105	.094071974			

TABLE 12

Analysis of Variance of α' Between and Within Male Groups

Source of Variance	DF	SS	MS	F	Hypothesis
Within Groups	91	.024216167	.00026611173		
Between Groups	16	.015827985	.00098924906	3.7174199	Rejected
Total	107	.040044152			

TABLE 13

Analysis of Variance of α'' Between and Within Total Groups

Source of Variance	DF	SS	MS	F	Hypothesis
Within Groups	197	.016200198	.000082234511		
Between Groups	16	.014039658	.00087747862	10.670442	Rejected
Total	213	.030239856			

Thus, American females can be discriminated from Indian females, American males from Indian males, and the total American group from the total Indian group on the basis of their overall performance on the EPPS.

Since discriminant function contributes both to the problem of discriminating between different populations and classifying them, the obtained values of the α, α', and α'' were utilized in classifying individuals from the two cultural groups. Tables 14, 15, and 16 summarize the findings for the three comparisons between American females and Indian females, American males and Indian males, and the total American group and the total Indian group.

TABLE 14

A Summary Comparison of Classification Efficiency for the LDF Procedure with Chance Expectations for Female Samples

Samples Used	Correct Classification by Formula		Correct Classification by Chance	
	N	%	N	%
1. Original American Female Sample (N=51)	45	88.23	25.5	50.0
2. Cross-validation American female sample (N=51)	38	74.50	25.5	50.0
3. Original Indian Female Sample (N=51)	47	85.45	27.5	50.0
4. Cross-validation Indian female sample (N=55)	49	89.09	27.5	50.0

TABLE 15

A Summary Comparison of Classification Efficiency for the LDF Procedure with Chance Expectations for Male Samples

Samples Used	Correct Classification by Formula		Correct Classification by Chance	
	N	%	N	%
1. Original American Male Sample (N=55)	42	76.36	27.5	50.0
2. Cross-Validation American Male Sample (N=55)	36	65.45	27.5	50.0
3. Original Indian Male Sample (N=53)	42	79.24	26.5	50.0
4. Cross-Validation Indian Male Sample (N=53)	42	79.24	26.5	50.0

TABLE 16

A Summary Comparison of Classification Efficiency for the LDF Procedure with Chance Expectations for the Male and Female Samples

Samples Used	Correct Classification by Formula		Correct Classification by Chance	
	N	%	N	%
1. Original American Sample (N=106)	88	83.01	53	50.0
2. Cross-Validation American Sample (N=106)	83	78.30	53	50.0
3. Original Indian Sample (N=108)	85	78.70	54	50.0
4. Cross-Validation Indian Sample (N=108)	76	70.37	54	50.0

It is obvious from the analysis that by the use of linear discriminant function, American and Indian populations can be significantly discriminated and classified in terms of 15 need variables.

Factor Structure of Needs Across Cultures:

Pearson correlation coefficients were computed separately between the EPPS variables of the 102 American females and 110 Indian females. The 16 x 16 correlation matrix for each country (see Tables 17 and 18) was factored by the centroid method, with the highest correlation coefficient in the column utilized as the communality estimate. The communalities obtained were reinserted in the matrix which was again factored. Three factors were found to be sufficient for each country using criteria for sufficient factors suggested by Fruchter (1954). A program developed by Garber (33) for Thurstone's Centroid Method of Factor Analysis and the electronic computer at the University of Vermont were utilized for computation of factors. The centroid matrix is presented in Table 19.

The interpretations of factors are based upon loadings of .30 or above or -.30 and below. Two centroid factors, A and B, match quite closely in the two countries. Factor A accounts for a high percentage of the total variance in the intercorrelation matrix for each country, especially India. It is a bipolar factor portraying the conventional female role. It is characterized by positive loadings on Deference, Order, Abasement, Nurturance, and Endurance, and negative loadings on Exhibition, Autonomy, Dominance, Change, and Aggression. It emphasizes the acceptance of abasement and deference and rejection of unrestrained behavior as implied in the expression of needs Exhibition, Autonomy, Dominance, and Aggression. The only difference between the American female and the Indian female in Factor A lies in the loading on need Heterosexuality. The conventional female role implies a much greater rejection of Heterosexuality by the Indian female than is the case for the American female.

Factor B is another bipolar factor, quite similar, especially in negative loadings, in the two countries. Both the American female and the Indian female reveal a rejection of affectional interaction as expressed in affiliative, succorant, nurturant, and heterosexual behavior. There are, however, some important differences in positive loadings of Factor B. In the case of American females, one finds an emphasis on need Autonomy; the Indian female, on the other hand, seeks change and new experiences.

Broadly speaking, the results of factor analysis show considerable promise in the development of basic dimensions for the taxonomic study of personality across diverse cultures.

TABLE 17

CORRELATIONS AMONG THE EPPS VARIABLES FOR
102 FEMALES FROM U.S.A.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Consistency Score
1.Ach	-06	-11	14	16	-35	-12	-01	01	-19	-36	-07	13	-12	11	-03
2.Def		28	-07	-28	02	11	-00	-43	20	20	-10	19	-35	-29	-17
3.Ord			-36	-26	-11	-08	05	-36	12	-05	-21	37	-13	-03	-26
4.Exh				19	-16	-08	-26	22	-14	-24	14	-28	-05	10	11
5.Aut					-35	18	-30	02	-18	-39	32	-22	-19	19	11
6.Aff						-18	23	01	04	40	07	-22	01	-26	16
7.Int							-32	-11	29	-12	-03	-06	-20	-21	-00
8.Suc								-25	-10	29	-33	-11	17	-04	07
9.Dom									-25	-15	01	-17	07	16	07
10.Aba										13	-30	09	-25	-29	-02
11.Nur											-22	-12	-10	-12	11
12.Chg												-21	-03	-18	01
13.End													-18	-20	-18
14.Het														00	08
15.Agg															-09

Decimal points omitted

TABLE 18

CORRELATIONS AMONG THE EPPS VARIABLES FOR
110 FEMALES FROM INDIA

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Consistency Scores
1.Ach	-00	-12	-18	-06	-15	-03	02	23	-17	03	-04	09	-20	-11	-02
2.Def		30	-27	-35	12	06	-11	-14	14	-03	-15	36	-37	-36	-02
3.Ord			-19	-21	-04	-01	-13	-38	15	-15	-01	28	-19	-36	-09
4.Exh				24	-06	-21	-18	26	-34	-24	16	-28	16	20	-23
5.Aut					-24	-04	-11	15	-30	-22	15	-37	07	26	-08
6.Aff						-03	17	-09	01	32	-25	-06	-16	-31	02
7.Int							-34	-11	19	-09	07	13	-34	-16	06
8.Suc								-20	04	29	-42	-20	11	-07	01
9.Dom									-42	-17	14	-27	-06	28	-12
10.Aba										15	-31	17	-23	-20	15
11.Nur											-32	-02	-22	-12	07
12.Cha												-13	10	-02	-07
13.End													-38	-30	09
14.Het														19	05
15.Agg															10

Decimal Points omitted

TABLE 19

Centroid Factors of Females from U.S.A. and India

Variable	U.S.A.				India			
	Factor			h^2	Factor			h^2
	A	B	C		A	B	C	
Achievement	-27	21	(-32)	22	04	27	(36)	20
Deference	(56)	(33)	06	43	(48)	(32)	-21	38
Order	(48)	19	(-45)	47	(33)	(30)	(-45)	40
Exhibition	(-49)	07	21	29	(-59)	-03	-23	40
Autonomy	(-53)	(31)	11	39	(-53)	03	17	31
Affiliation	29	(-54)	(31)	47	28	-24	-10	15
Intraception	08	(34)	(31)	22	18	(31)	19	17
Succorance	24	(-50)	(-31)	40	17	(-55)	03	33
Dominance	(-45)	-24	04	26	(-50)	19	27	36
Abasement	(47)	16	20	29	(51)	-16	06	29
Nurturance	(48)	(-51)	23	54	(37)	(-39)	17	32
Change	(-34)	16	23	19	(-43)	(41)	-17	38
Endurance	(32)	(30)	(-39)	35	(50)	(33)	-09	37
Heterosexuality	-19	(-42)	-25	28	(-46)	(-37)	-26	42
Aggression	(-35)	-12	-29	22	(-53)	-20	29	41
Percentage of Variance	46	32	22		55	29	16	

Note. - Decimal points omitted for factor loadings and communalities. Brackets include saturations of +.30 or above or -.30 and below

Conclusions and Implications

1. The university students from the United States and India differed significantly on a number of need variables.
2. The observed differences in needs were found to be quite stable and consistent from sample to sample, especially in the case of females.
3. By means of Fisher's linear discriminant function American and Indian populations could be significantly discriminated and classified in terms of needs as measured by the Edwards Personal Preference Schedule.
4. The factor structure of needs in American and Indian subjects was found to be highly similar.
5. The objective personality tests, such as Edwards Personal Preference Schedule, and multivariate techniques such as discriminant function have great potential for the objective cross-cultural study of personality.

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